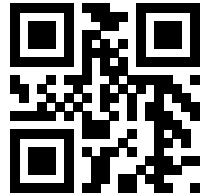
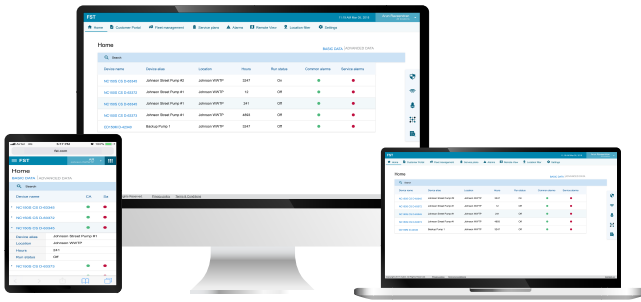


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1 Introduction and Safety

1.1 Introduction

Purpose of the manual

The purpose of this manual is to provide necessary information for installation, operation, and maintenance of the unit.

Read and keep the manual

Save this manual for future reference, and keep it readily available at the location of the unit.



CAUTION:

Read this manual carefully before installing and using the product. Improper use of the product can cause personal injury and damage to property, and may void the warranty.

The equipment, and its functioning, may be impaired if used in a manner not specified by the manufacturer.

Intended use



WARNING:

Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment and the surroundings. This includes any modification to the equipment or use of parts not provided by Xylem. If there is a question regarding the intended use of the equipment, please contact a Xylem representative before proceeding.

1.2 Safety terminology and symbols

About safety messages

It is extremely important that you read, understand, and follow the safety messages and regulations carefully before handling the product. They are published to help prevent these hazards:

- Personal accidents and health problems
- Damage to the product and its surroundings
- Product malfunction

Hazard levels

Hazard level	Indication
 DANGER:	A hazardous situation which, if not avoided, will result in death or serious injury
 WARNING:	A hazardous situation which, if not avoided, could result in death or serious injury
 CAUTION:	A hazardous situation which, if not avoided, could result in minor or moderate injury
NOTICE:	Notices are used when there is a risk of equipment damage or decreased performance, but not personal injury.

Special symbols

Some hazard categories have specific symbols, as shown in the following table.

Electrical hazard	Magnetic fields hazard
 Electrical Hazard:	 CAUTION:

1.3 User safety

Introduction

All government regulations, local health and safety directives must be observed.

Prevent danger due to electricity

All danger due to electricity must be avoided. Electrical connections must always be carried out in compliance with the following:

- The standard connections shown in the product documentation that is delivered together with the product
- All international, national, state, and local regulations. (For details, consult the regulations of your local electricity supplier.)

For more information about requirements, see sections dealing specifically with electrical connections.

1.3.1 Power lock-out



DANGER: Electrical Hazard

Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized. This applies to the control circuit as well.



1.3.1.1 Battery

Check that the cable has been disconnected from the negative battery terminal, as part of the power lock-out process.

1.3.2 Qualification of personnel



WARNING: Electrical Hazard

Risk of electrical shock or burn. A certified electrician must supervise all electrical work. Comply with all local codes and regulations.

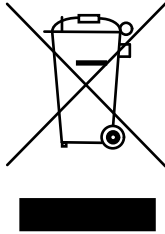
All work on the product must be carried out by certified electricians or Xylem authorized mechanics.

Xylem disclaims all responsibility for work done by untrained, unauthorized personnel.

1.4 End of life product disposal

Handle and dispose of all waste in compliance with local laws and regulations.

EU only: Correct disposal of this product – WEEE Directive on waste electrical and electronic equipment



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This marking on the product, accessories or literature indicates that the product should not be disposed of with other waste at the end of its working life.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Waste from electrical and electronic equipment can be returned to the producer or distributor.

1.5 Spare parts



CAUTION:

Only use the manufacturer's original spare parts to replace any worn or faulty components. The use of unsuitable spare parts may cause malfunctions, damage, and injuries as well as void the warranty.

1.6 Warranty

For information about warranty, see the sales contract.

1.7 Support

Xylem only supports products that have been tested and approved. Xylem does not support unapproved equipment.

2 Product Description

2.1 Introduction

The FST module collects the engine and the pump data. This data is transmitted to the cloud application for view, monitor, and data log purposes.

The FST application shows the same information that shows on the PrimeGuard 2 or PV102P control panel.

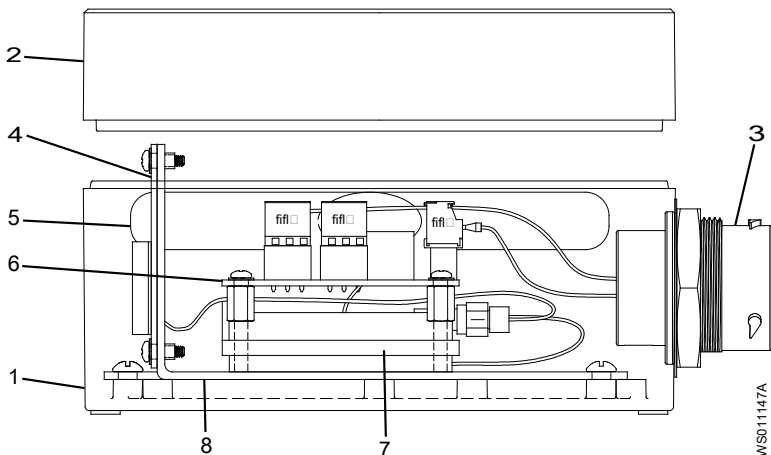
The module communicates through cellular and satellite networks.

The application allows the pump engine to start and stop from a remote location.

2.2 Features

- Monitor the engine and pump parameters for the following functions:
 - Remote troubleshooting with the ECU codes
 - Ensure a correct system operation
 - Bypass without a pump monitoring
- Start, stop, and vary the engine speed from a remote location for the improved system control
- Allow cellular and satellite communication
- Log data and hours for an accurate and easy reporting
- Send alarm notification for on or off, and failure of the engine
- Send automatic geofence alerts with a streamlined tracking
- Manage equipment from a single platform, and integrate with asset management software

2.3 Parts



1. FST module
2. FST module cover
3. 21-pin connector
4. Satellite antenna
5. Cellular antenna
6. PCB assembly
7. Modem
8. Mounting bracket

2.4 Extra parts

Part number	Item	Description
Optional	MJK flowmeter	Connects with the PrimeGuard 2 and PV102P control panel to measure the flow of the liquid
Optional	Suction pressure transducer	Connects with the PrimeGuard 2 and PV102P control panel to measure the suction pressure in psi
Optional	Discharge pressure transducer	Connects with the PrimeGuard 2 and PV102P control panel to measure the discharge pressure in psi
Optional	Fuel level transducer	Connects with the PrimeGuard 2 and PV102P control panel to measure the fuel level in %
Optional	Sump level transducer	Connects with the PrimeGuard 2 and PV102P control panel to measure the sump level in ft
Optional	Vibration sensor	Connects with the I/O extension cable to measure the vibration
FSTWIREHARNESS	Wiring harness for the FST module	Connects the FST module and the control panel
FSTIOEXTCABLE	I/O extension cable for the FST module	Connects digital input and analog input devices such as floats, flowmeters, transducers to the FST module
4000174	Pigtail harness	Connects with the PrimeGuard 2 control panel
GPFSTBRKT	Mounting bracket	Used to install the FST module on the pump engine enclosure
2902829	Signal isolator	Used to connect the flowmeter to the PrimeGuard 2 and PV102P control panel

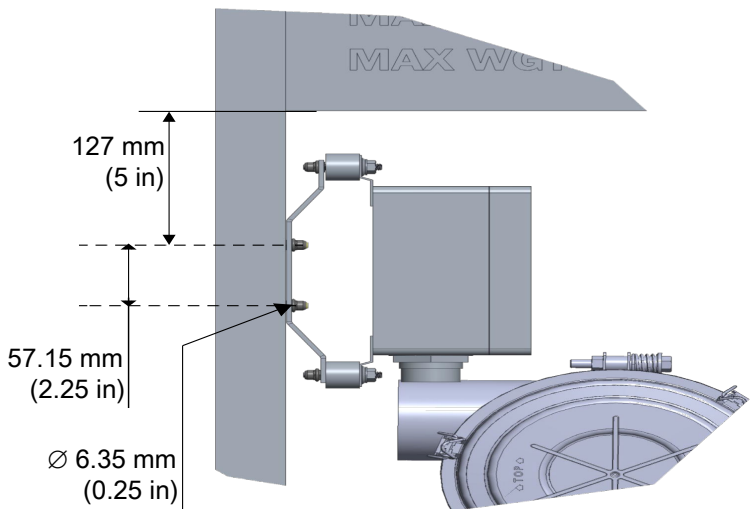
3 Mechanical Installation

3.1 Precautions

Before starting work, make sure that the safety instructions in the chapter [Introduction and Safety](#) on page 3 have been read and understood.

3.2 Prepare for an open engine unit

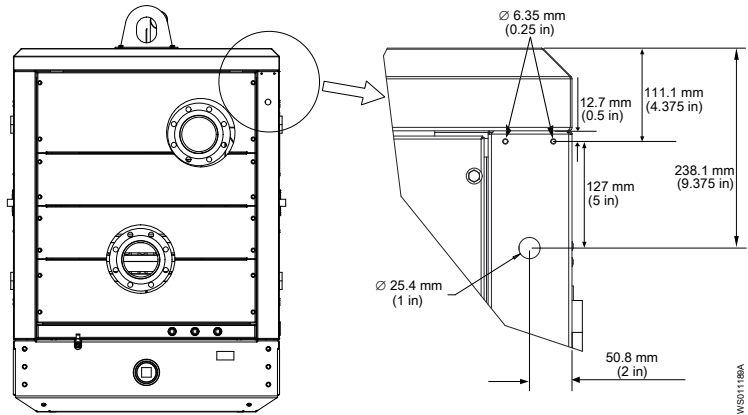
1. Drill a 6.35 mm (0.25 in) diameter hole at a distance of 127 mm (5 in) from the lifting bail plate.
2. Drill one more 6.35 mm (0.25 in) diameter hole at a distance of 57.15 mm (2.25 in) from the first hole.



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3.3 Prepare for an enclosed engine unit

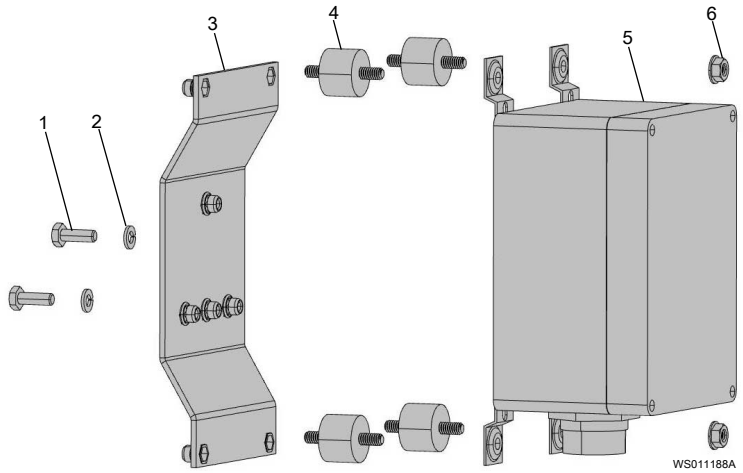
1. Drill two 6.35 mm (0.25 in) diameter holes as high as possible on the enclosure.



2. Drill a 25.4 mm (1 in) diameter hole 127 mm (5 in) below the 6.35 mm (0.25 in) diameter holes.
3. Install a cable gland or a grommet on the 25.4 mm (1 in) diameter hole.
4. Route the cable harness through the 25.4 mm (1 in) hole.

3.4 Install the FST module

1. Install the following on the mounting frame:
 - the mounting bracket
 - the two flat washers
 - the two hexagon head bolts
2. Install the four isolators on the mounting bracket.
3. Install the FST module on the four isolators.
4. Tighten the four hexagon nuts on the isolators.



1. Hexagon head screw
2. Flat washer
3. Mounting bracket
4. Isolator
5. FST module
6. Hexagon nut

Figure 1: Installation of the FST module

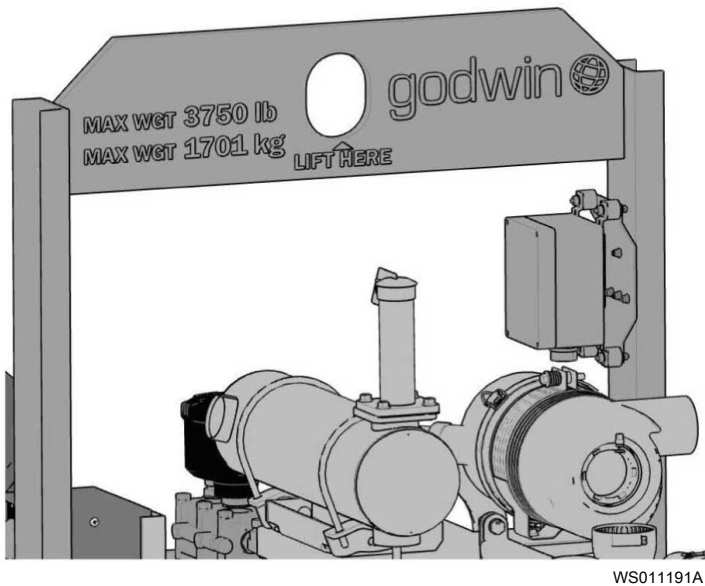
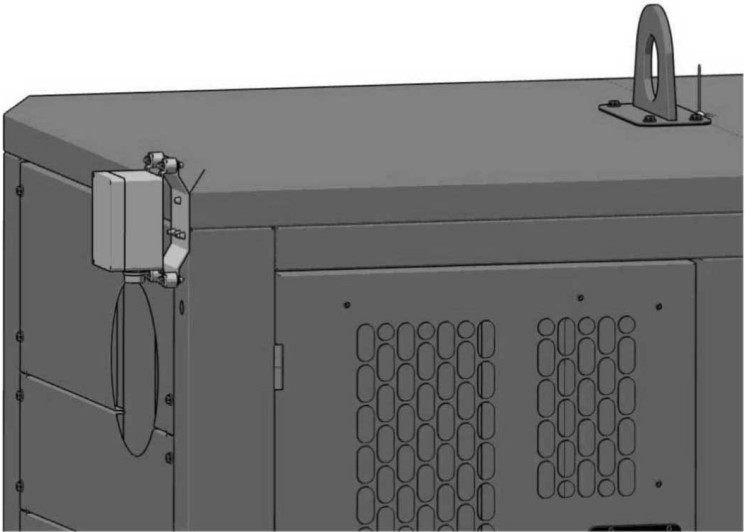


Figure 2: Installation of the FST module on an open unit



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Figure 3: Installation of the FST module on an enclosed unit

4 Electrical Installation

4.1 Precautions

Before starting work, make sure that the safety instructions in the chapter [Introduction and Safety](#) on page 3 have been read and understood.



DANGER: Electrical Hazard

Before starting work on the unit, make sure that the unit and the control panel are isolated from the power supply and cannot be energized. This applies to the control circuit as well.



DANGER: Crush Hazard

Moving parts can entangle or crush. Always disconnect and lock out power before servicing to prevent unexpected startup. Failure to do so could result in death or serious injury.



WARNING: Electrical Hazard

Risk of electrical shock or burn. A certified electrician must supervise all electrical work. Comply with all local codes and regulations.



WARNING: Electrical Hazard

There is a risk of electrical shock or explosion if the electrical connections are not correctly carried out, or if there is fault or damage on the product. Visually inspect equipment for damaged cables, cracked casings or other signs of damage. Make sure that electrical connections have been correctly made.



CAUTION: Electrical Hazard

Prevent cables from becoming sharply bent or damaged.

4.1.1 Battery

Check that the cable has been disconnected from the negative battery terminal, as part of the power lock-out process.

4.2 Cables

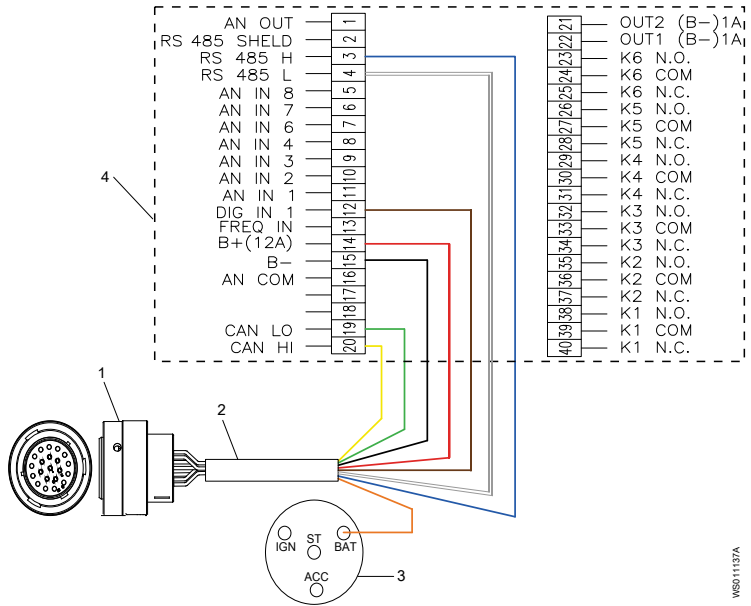
These requirements apply for cable installation:

- The cables must be in good condition, not have any sharp bends, and not be pinched.
- The sheathing must not be damaged and must not have indentations or be embossed at the cable entry.
- The minimum bending radius must not be below the accepted value.
- The cables must have the appropriate temperature rating.

4.3 Connect the wiring harness to the control panel

1. Connect the female circular connector of the wiring harness to the FST module.
2. Connect the spliced terminals of the wiring harness to the control panel.

Wire color	Control panel		
	PrimeGuard 2 terminal	PV102P terminal	Description
Orange	Key switch Batt	Key switch Batt	V+
Black	15	6, 7, and 8	BATT-
Brown	12	14	DIG IN 1
Green	19	10	CAN LO
Yellow	20	11	CAN HI
Red	14	18	BATT +
White	4	12	RS 485 L
Blue	3	13	RS 485 H



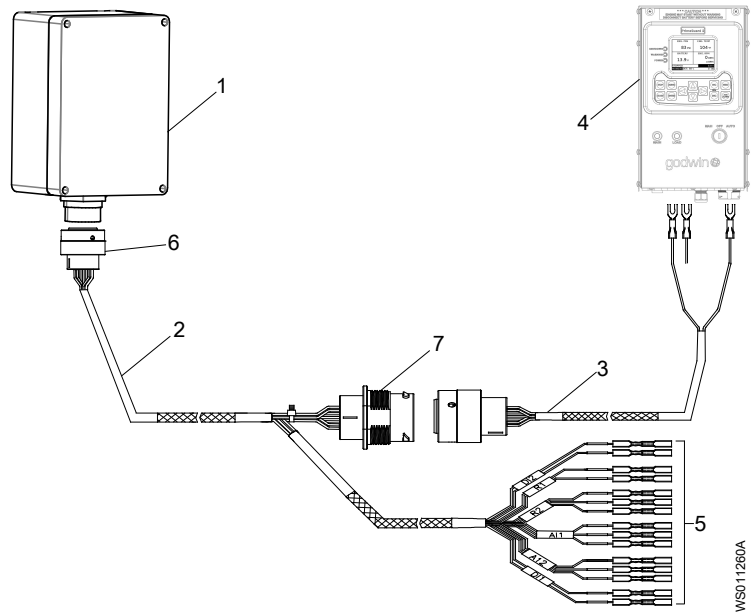
1. Circular connector, connects to the FST module
2. Wiring harness for the FST module
3. Key switch
4. Control panel

4.4 Connect the I/O extension cable

1. Connect the female connector of the I/O extension cable to the FST module.
2. Connect the other connector of the I/O extension cable to the circular connector of the wiring harness.
3. Connect the spliced terminals of the wiring harness to the control panel.

For more information regarding pin connection, see [Connect the wiring harness to the control panel](#) on page 14.

4. As applicable, connect the spliced terminals of the I/O extension cable to the following:
 - Relays
 - Analog signal devices
 - Digital signal devices

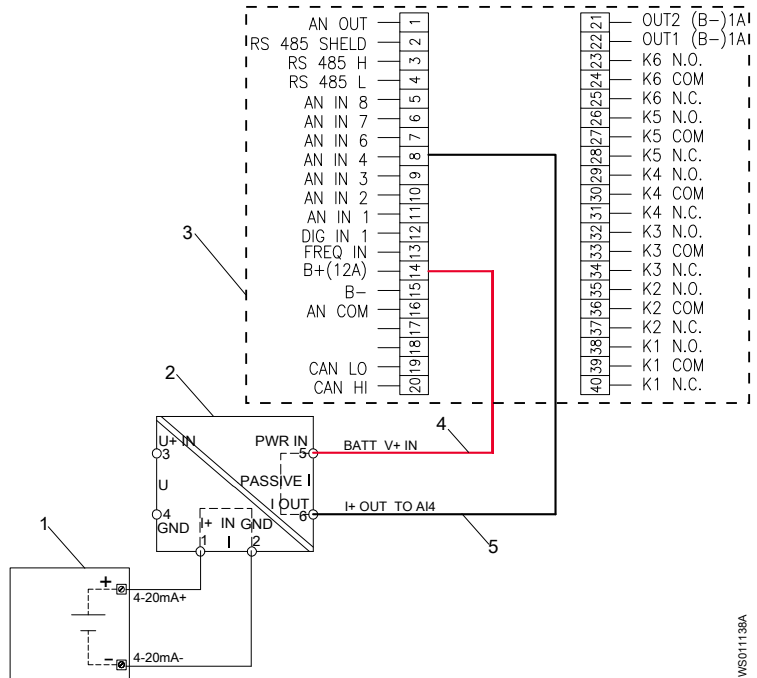


1. FST module
2. I/O extension cable for the FST module
3. Wiring harness for the FST module
4. Control panel
5. Spliced terminals that connect to relays, analog signal devices, or digital signal devices
6. HDP26 connector
7. HDP24 connector

4.5 Connect a flowmeter to the control panel

1. Connect the signal isolator to the control panel.
2. Set the DIP switch 7 to the **ON** position.
3. Connect the signal isolator to a flowmeter.

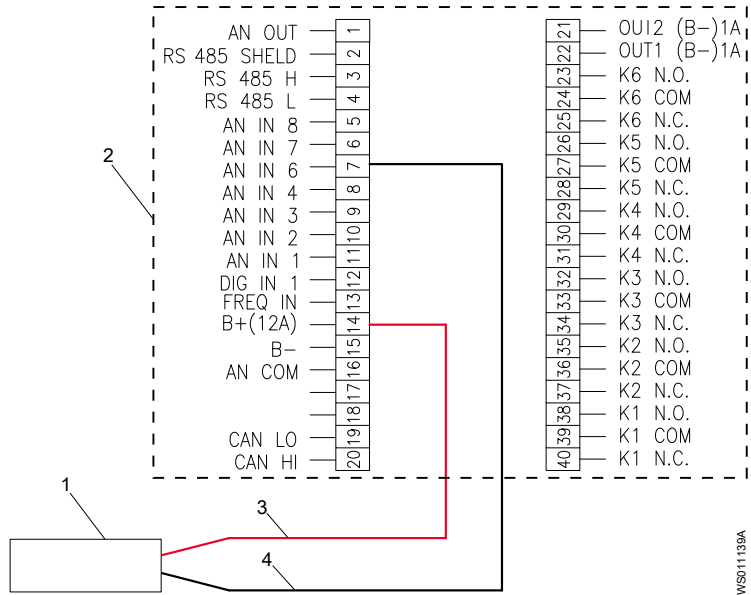
Wire color	Flowmeter	Signal isolator
Red wire	Analog output +	I+
Black wire	Analog output -	GND



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4.6 Connect the suction pressure transducer

1. Connect the suction pressure transducer to the control panel.

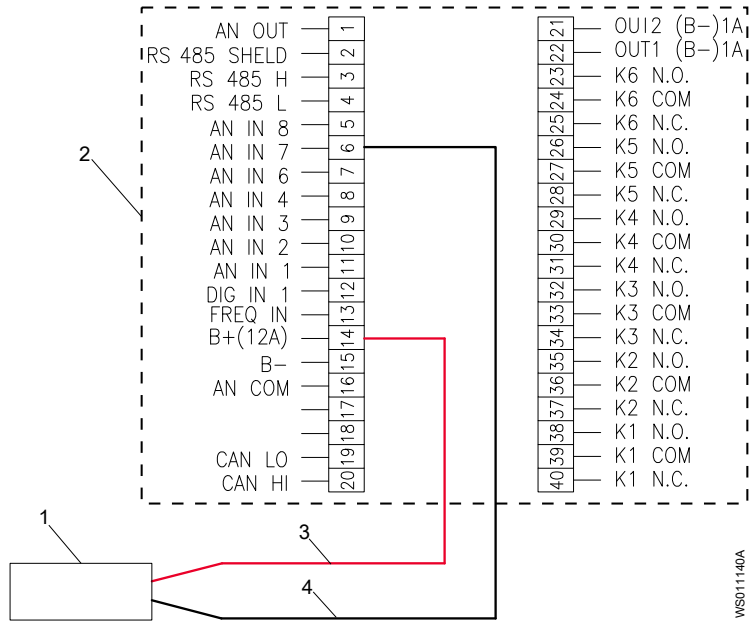


1. Suction pressure transducer
2. Control panel
3. Red wire
4. Black wire

2. Set the parameters for the suction pressure transducer on the control panel.
See [Set the parameters for the suction pressure transducer](#) on page 26.

4.7 Connect the discharge pressure transducer

1. Connect the discharge pressure transducer to the control panel.

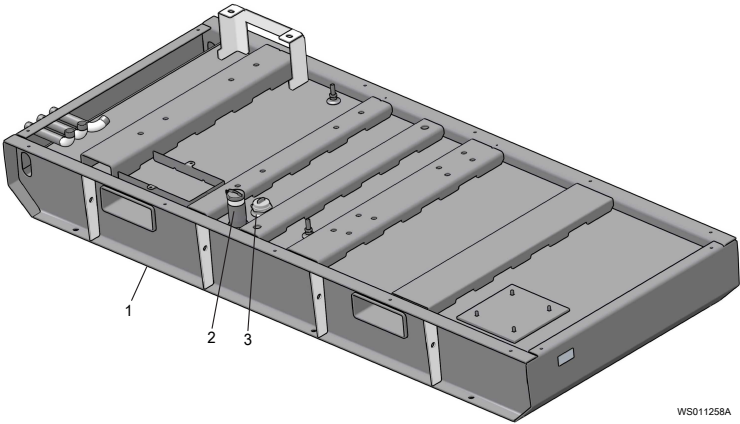


1. Discharge pressure transducer
 2. Control panel
 3. Red wire
 4. Black wire
2. Set the parameters for the discharge pressure transducer on the control panel.
 See [Set the parameters for the discharge pressure transducer](#) on page 26.

4.8 Connect a fuel level transducer

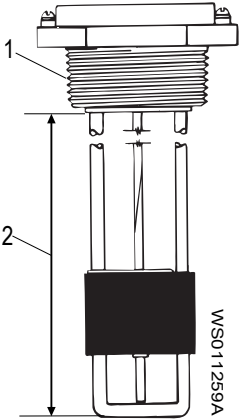
Select a fuel level transducer

1. Remove the fuel gauge from the fuel tank.
2. Insert a measuring tape into the fuel tank from the fuel gauge opening.
3. Measure from the bottom of the fuel tank to the top of the fuel gauge opening.



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1. Fuel tank
 2. Fuel fill
 3. Fuel gauge
4. Record the measurement.
- The height of the sensor blade of the fuel level transducer must be slightly smaller than the depth of the tank.
5. To determine the height of the sensor blade, subtract 31.75 mm (1.25 in) from the recorded measurement.



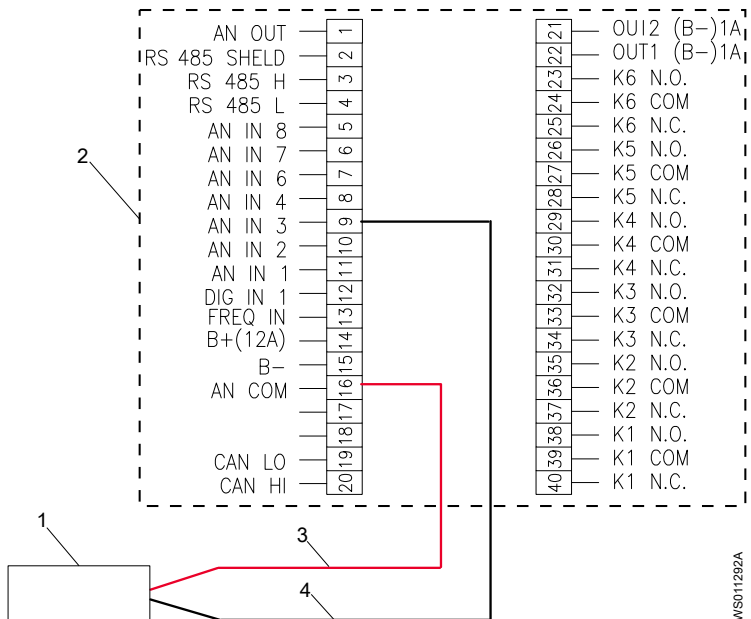
1. Fuel level transducer
 2. Height of the sensor blade
6. Use the result from the step 5 to select a fuel level transducer from the following list.

Fuel level transducer	Godwin part number
14.5" 1-1/2" NTP resistive fuel level transducer	ACT-10897
13.5" 1-1/2" NTP resistive fuel level transducer	ACT-10898

Fuel level transducer	Godwin part number
11.5" 1-1/2" NTP resistive fuel level transducer	ACT-10899
10.5" 1-1/2" NTP resistive fuel level transducer	ACT-10900
9.5" 1-1/2" NTP resistive fuel level transducer	ACT-10901
8.5" 1-1/2" NTP resistive fuel level transducer	ACT-10902
7.5" 1-1/2" NTP resistive fuel level transducer	ACT-10903
6.5" 1-1/2" NTP resistive fuel level transducer	ACT-10904
34" 1-1/2" NTP resistive fuel level transducer	ACT-10922

Connect the fuel level transducer to the control panel

1. Remove the existing fuel gauge from the fuel tank.
2. Apply the Teflon tape to the fuel level transducer.
3. Tighten the fuel level transducer into the 1.5" FNPT port.
4. Pass the red wire and the black wire through the cable gland on the bottom of the control panel where the FST harness enters.
5. To open the control panel, remove the top two screws above the display screen.
6. Connect the fuel level transducer to the control panel.

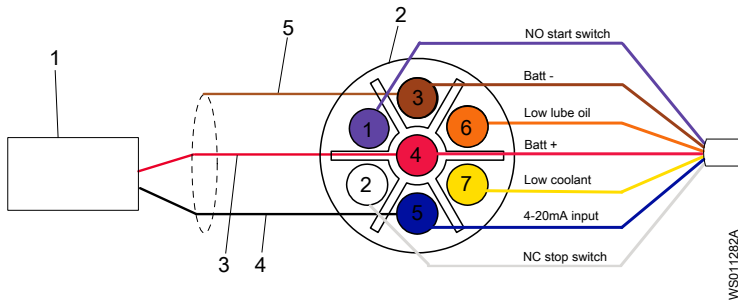


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7. Close the control panel and tighten the two screws again.
8. Set the parameters for the fuel level transducer on the control panel.
See [Set the parameters for the fuel level transducer](#) on page 26.

4.9 Connect the sump level transducer

1. Connect the sump level transducer to the 7-pin connector of the pigtail harness.
2. Connect the other connector of the pigtail harness to the 7-pin connector of the control panel.

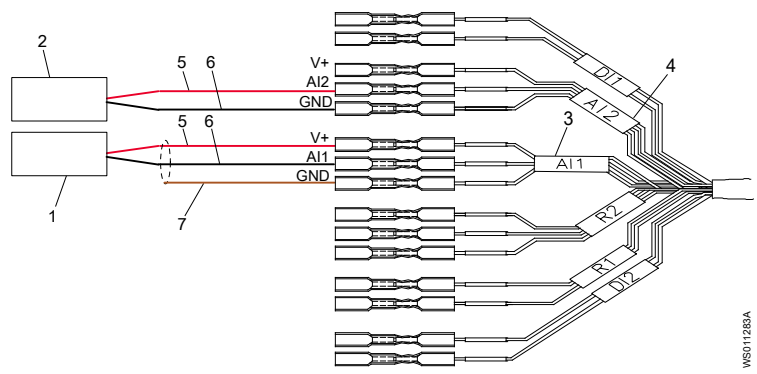


1. Sump level transducer
 2. 7-pin connector of the pigtail harness
 3. Red wire
 4. Black wire
 5. Shield
3. Set the parameters for the sump level transducer on the control panel.
See [Set the parameters for the sump level transducer](#) on page 27.

4.10 Connect devices to IO extension cable

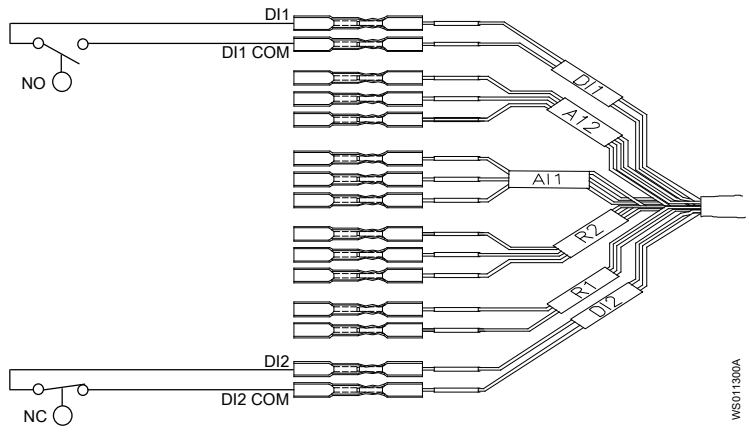
Connect 4-20 mA field sensors

1. Connect a passive 4-20 mA field sensor to the AI1 spliced terminals of the I/O extension cable.
This sensor is not externally powered. It requires power from FST.
2. Connect an active 4-20 mA field sensor to the AI2 spliced terminals of the I/O extension cable.
This sensor is externally powered. It does not require power from FST.



Connect the float switches

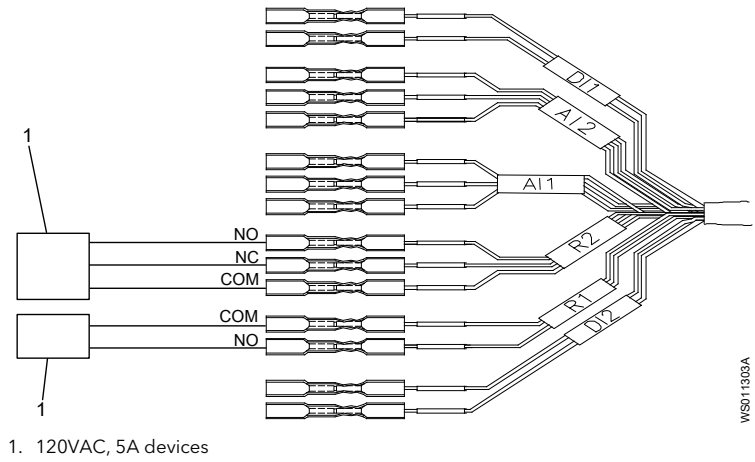
Connect a float switch to the DI1 or DI2 spliced terminals of the I/O extension cable.



Connect relays

As applicable, connect 120VAC, 5A device R1 and R2 spliced terminals of the I/O extension cable.

R1 COM and NO	R2 COM and NO	R2 COM and NC
5 A @ 30 VDC	5 A @ 30 VDC	5 A @ 30 VDC
xA @ 120 VAC	xA @ 120 VAC	xA @ 120 VAC
yA @ 240 VAC	yA @ 240 VAC	yA @ 240 VAC



5 System Setup

Introduction

The following configurations are done on the PrimeGuard 2 control panel.
For the PV102P configuration parameters, refer to PV102P control panel documentation.

5.1 Set the communication parameters

1. Go to **MAIN PARAMETERS > COMMUNICATION PARAMETERS**.
2. Set the communication parameters:

Parameter	Setting
MODBUS SERVER ADDRESS	247
RS485 SERVER BAUD RATE	38400
PROTOCOL SELECTION	Modbus

5.2 Set the miscellaneous parameters

1. Go to **MAIN PARAMETERS > MISCELLANEOUS PARAMETERS**.
2. Set the miscellaneous parameters:

Parameter	Setting
Mechanical Engines	None
Electronic Engine	J1939 PrimeGuard HRS or J1939 ECU Engine HRS

5.3 Set the digital input parameter

1. Go to **MAIN PARAMETERS > DIGITAL INPUT PARAMETERS**.
2. Set the digital input parameter:

Control panel	Parameter	Setting
PrimeGuard 2	DIGITAL INPUT 1	Remote call to run
PV102P	DIGITAL INPUT 4	Remote call to run

This parameter is used to start and stop the pump remotely.

5.4 Set the analog input parameters

1. Go to **MAIN PARAMETERS > ANALOG INPUT PARAMETERS**.
2. Set the following analog input parameters.

These parameters are used for optional devices that are pressure transducers and flowmeters.

Set the parameters for the flowmeter

1. Select the **ANALOG INPUT 4** parameter.
2. Select the **4-20 mA FLOW RATE** parameter.
3. Set the following values:

Value	Setting
0	4.00 mA
Max	Maximum flow of the 4-20 mA signal from the flowmeter

The default flow values for the MJK 7200 series flowmeters are as follow:

Diameter, in	Flow, gpm
3	800
4	1000
6	3000
8	5000
10	8000
12	10000
18	25000
24	40000
36	100000
48	200000

Set the parameters for the suction pressure transducer

1. Select the **ANALOG INPUT 6** parameter.
2. Select the **4-20 mA SUCTION PRESSURE** parameter.
3. Set the following values for the applicable transducer:

Value	PXTK30v30 30 inHg to 30 psi	PXTK30v60 30 inHg to 60 psi	PXTK30v100 30 inHg to 100 psi	Vacuum transducer
0	9.26 mA	7.14 mA	6.04 mA	4 mA
Max	30 psi	60 psi	100 psi	14.7 psi

Set the parameters for the discharge pressure transducer

1. Select the **ANALOG INPUT 7** parameter.
2. Select the **4-20 mA DISCHARGE PRESSURE** parameter.
3. Set the following values:

Value	Setting
0	4.00 mA
Max	Maximum pressure of the discharge pressure transducer in psi

Set the parameters for the fuel level transducer

1. Select the **ANALOG INPUT 3 > MURPHY FUEL LEVEL** parameter.
2. Press **NEXT** to return to the main screen.

3. Select the **ENGINE PARAMETERS > FUEL LOW WARNING** parameter.
4. Set the necessary percentage level with the up and down arrow key.
5. Press **ENTER**.
6. Select the **ENGINE PARAMETERS > FUEL LOW SHUTDOWN** parameter.
7. Set the necessary percentage level with the up and down arrow key.
8. Press **ENTER**.
9. Press **NEXT** to return to the main screen.

Set the parameters for the sump level transducer

1. Go to **OPERATION PARAMETERS > OPERATION MODE**.
2. Select the **MANUAL/AUTO NO WARNING** mode.
3. Then, go to **MAIN PARAMETERS > PUMP CONTROL PARAMETERS > START/STOP TYPE**.
4. Select the **LEVEL > START LEVEL** parameter.
5. To automatically start the pump, set the high level of sump with the up and down arrow key.
6. Press **ENTER**.
7. Select the **LEVEL > STOP LEVEL** parameter.
8. To automatically start the pump, set the low level of sump with the up and down arrow key.
9. Press **ENTER**.
10. Select the **LEVEL > MAINTAIN LEVEL** parameter.
11. Make sure that the maintain ft level is less than the stop level. Adjust as necessary.
12. Go to **MAIN PARAMETERS > ANALOG INPUT PARAMETERS**.
13. Select the **ANALOG INPUT 5** parameter.
14. Set the following values:

Value	Setting
ZERO OFFSET	4.00 mA
MAX	Maximum value of the level transducer in ft.

Sump level transducers are typically rated in psi, which is displayed on the transducer. The psi rating of the sump level transducer must be converted to feet.

Example: 15 psi transducer x 2.31 = 35 feet.

15. Press **NEXT** to return to the main screen.
16. Set the key to **OFF** to set parameters in the controller memory.

6 Operation

Start the application

1. Start the FST application at <http://cloud.xylem.com>.
2. Enter the user name and password to log on.

6.1 Home

This tab shows the basic and the advance pump data, the location of the pump, and the alarm status.

6.1.1 View the device data

- View the basic data
 - a) On the **Home** page, click the **BASIC DATA** tab.
 - b) To view the device alarm details, click the **Common alarms** or **Service alarms** icon.

The application shows the **Alarm manager** page.
 - c) To view the control panel of a specific device, click the device name.

The application shows the **Control panel** page.
- View the advanced data
 - a) On the **Home** page, click the **ADVANCED DATA** tab.
 - b) To view the device alarm details, click the **Common alarms** or **Service alarms** icon.

The application shows the **Alarm manager** page.
 - c) To view the control panel of a specific device, click the device name.

The application shows the **Control panel** page.

6.2 Customer portal

This tab allows the download of customer documents, for example, rental contract, and sales order.

6.2.1 Download customer documents

1. Click the **Customer portal** tab.
2. Select one of the following document types:

Document type	Description
Rental contract	Shows the rental contract report for the selected document number
Sales order	Shows the report of the service plans for the selected document number

3. Select the document number from the list.
4. Click **Submit**.

The application shows the details of the selected document.
5. Click the FST service plan icon.

The application shows the **Service plan** page of the device.

6.3 Fleet management

This tab shows devices, their owners, other devices that integrate with pumps, and the device location.

6.3.1 Change device details

1. Click the **Fleet management** tab.
2. On the **Fleet management** page, click the device name.
3. If applicable, in the **Device alias** text box, change the device name.
4. Click **Next**.
5. If applicable, change the following locations:
 - **Region**
 - **Hub**
 - **Customer**
 - **Site**
6. Click **Save**.

6.4 Service plans

6.4.1 Configure a service plan

1. Click the **Service plans** tab.
2. In the **Device name** list, select the device to configure the service plan.
3. Select one or more of the following service plans:

Service plans	Description
FST base plan	Gives access to the basic features of the FST This service must be selected to select the other services
Advanced data access and Data log access	Gives access to the ADVANCED DATA tab and the Data log page
Remote control	Gives access to the Control panel page
Satellite connectivity	Gives access to the Remote view tab
Interactive telephone alarming	Gives access to configure the telephone and SMS alarm notifications

4. To include the selected services in the service plan, click **Continue**.
5. To discontinue the existing service plan, click **Discontinue**.
6. To reset the service plan, click **Reset**.

6.5 Alarms

6.5.1 Acknowledge an alarm

1. Click the **Alarms** tab.
2. In the **Device name** list, select the device to acknowledge the alarm.
3. Select the acknowledge icon.

The following information replaces the acknowledge icon:

- Date and time of the alarm acknowledgment
- Person who acknowledged the alarm

6.5.2 View Service Advisor

1. Click the **Alarms** tab.
2. In the **Device name** list, select the device to view the service advisor.
3. Click the **Service advisor** icon.
The application shows the corrective action information.

6.6 Remote view

This tab shows the device location in the map view.

The click on the balloon icon shows the device details.

6.7 Location filter

6.7.1 Filter the locations

1. Select one or more regions from the **Region** list.
The **Hub** list is shown.
2. If necessary, select one or more hubs from the **Hub** list.
The **Customer** list is shown.
3. If necessary, select one or more customers from the **Customer** list.
The **Site** list is shown.
4. If necessary, select one or more sites from the **Site** list.
5. Click **Save**.
The location filter is applied for the selected locations.

6.8 Settings

6.8.1 User administration

6.8.1.1 View the users list

1. Click the **Settings** tab.
2. On the **Settings** page, click the **User administration** button.
The **User administration** page shows the user details, for example, name, contact information, location assignment, and role.

6.8.1.2 Change the user details

1. Click the **Settings** tab.
2. On the **Settings** page, click the **User administration** button.
3. On the **User administration** page, click the user to change the details.
4. On the **Edit user** page, change the details as applicable.
5. Click the **Update** button.

6.8.1.3 Create a user

1. Click the **Settings** tab.
2. On the **Settings** page, click the **User administration** button.
3. On the **User administration** page, click the **Create user** button.
4. In the **Create user** page, type the name, email, and phone number of the user in the respective text box.
5. In the **Location assignment** list, select one of the following locations:

Service plan	Description
Region	This location is a logical grouping of the hubs. The group of hubs define the geographic location of the region.
Customer	This location is a business entity that has a physical address, billing address, and account number. Usually, the entity pays for the features and services. It is possible for customers to temporarily own the devices. It must have a geographic location.
Hub	This location is the owner of a device. It is a customer or a Xylem location. It must have a geographic location. The hub pays for the services and features.
Site	This location is a physical location where devices are installed permanently or temporarily. It must have a geographic location.

6. In the **Individual rights** check box, select the following user rights as applicable:

Service plan	Description
FST access	Gives access to the basic features of the FST
FST admin	Gives the FST administrator rights
Service advisor	Gives access to the Service advisor page
Alarm notification	Gives access to the Alarms page in the Settings tab
Control panel access	Gives access to the Control panel page
Advance data log access	Gives access to the ADVANCE DATA tab and the Data log page

7. In the **Time zone** list, select the time zone for the user.
8. In the **Units** list, select one of the following units:
 - **SAE**
 - **Metric**
9. Click **Save**.

6.8.2 Device administrator

6.8.2.1 Manage devices

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Device administrator** button.
3. On the **Device management** page, click the device to change the details.
4. If applicable, in the **Device alias** text box, change the device name.
5. Click **Next**.
6. If applicable, change the following locations:
 - **Region**
 - **Hub**
 - **Customer**
 - **Site**
7. Click **Save**.

6.8.3 Location administration

6.8.3.1 View the locations list

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Location administration** button.
The **Location administration** page shows the lists of regions, hubs, customers, and sites.
3. In the **Search Region**, **Search Hub**, **Search Customer**, or **Search Site** box, type the name of the location to search.

6.8.3.2 Create a region

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Location administration** button.
3. On the **Location administration** page, select the **Region** column header.
The **Create** button is enabled.
4. Click the **Create** button.
5. On the **Create new region** page, type a region name.
6. In the **Associated hubs** list, select one or more hub names to associate with the region.
7. Click **Create**.

6.8.3.3 Create a hub

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Location administration** button.
3. On the **Location administration** page, select the **Hub** column header.
The **Create** button is enabled.
4. Click the **Create** button.

5. On the **Create new hub** page, type a hub name.
6. Type the hub ID.
7. Type the hub address.
8. In the **Xylem Service Center** list, select a service center for the hub.
9. In the **Associated customers** list, select one or more customer names to associate with the hub.
10. In the **Financial contact email** text box, type the email address.
11. In the **Contact number** text box, type the telephone number.
12. Click **Create**.

6.8.3.4 Create a customer

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Location administration** button.
3. On the **Location administration** page, select the **Customer** column header.
The **Create** button is enabled.
4. Click the **Create** button.
5. On the **Create new customer** page, type a customer name.
6. Type the customer ID.
7. Type the customer address.
8. In the **Xylem Service Center** list, select a service center for the customer.
9. In the **Associated sites** list, select one or more site names to associate with the customer.
10. In the **Financial contact email** text box, type the email address.
11. In the **Contact number** text box, type the telephone number.
12. Click **Create**.

6.8.3.5 Create a site

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Location administration** button.
3. On the **Location administration** page, select the **Site** column header.
The **Create** button is enabled.
4. Click the **Create** button.
5. On the **Create new site** page, type a site name.
6. Type the site ID.
7. Type the site address.
8. In the **Xylem service center** list, select a service center for the site.
9. In the **Financial contact email** text box, type the email address.
10. In the **Contact number** text box, type the telephone number.
11. Click **Create**.

6.8.3.6 View or change the location details

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Location administration** button.
3. On the **Location administration** page, select the name of the location from the following lists to change details:
 - **Region**
 - **Hub**
 - **Customer**
 - **Site**
4. On the edit location page, change the location details as applicable.
5. Click the **Update** button.

6.8.3.7 Delete a location

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Location administration** button.
3. On the **Location administration** page, select the name of the location from the following lists to delete:
 - **Region**
 - **Hub**
 - **Customer**
 - **Site**
4. On the edit location page, click **Delete**.

6.8.4 Input output

6.8.4.1 Configure input output devices

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Input/Output admin** button.
3. On the **Input output configuration** page, select the device name.
4. For the **Digital input 1**, select the input type and alarm status.
5. For the **Digital input 2**, select the input type and alarm status.
6. Click **Next**.
7. Set the **Analog input 1** parameters.
8. Click **Next**.
9. Set the **Analog input 2** parameters.
10. Click **Next**.
11. Select the values for the **Output relay 1** and the **Output relay 2**.

This is for switching 120VAC, 5A devices. One relay is normally open and the other is normally open and normally closed.
12. Click **Save**.

6.8.5 Alarm administration

6.8.5.1 Manage alarms

1. Click the **Settings** tab.
2. On the **Settings** page, click the **Alarm admin** button.
3. On the **Alarm manager** page, select the device name.
4. In the **Delay** list, select a delay time.
5. In the **Recipient name** list, select a recipient.
6. In the **Delivery method** list, select one or more of the following delivery methods:
 - Text message
 - Email
7. In the **Alarm type** list, select one or more of the following alarm types:
 - **Common alarms**
 - **Service maintenance alarm**
 - **Pump start**
 - **Pump stop**
 - **Analog input 1**
 - **Analog input 2**
 - **Digital input 1**
 - **Digital input 2**
8. To add one more recipient, click the **Add another recipient** button.
9. Click **Save**.

6.9 Right navigation pane

Icon	Type	Description
User administration	Read-only	Shows access to the User administration page
FST access	Read-only	Shows access to the FST access page
Service advisor	Read-only	Shows access to the Service advisor page
Control panel	Clickable	Shows access to the Control panel page For more information, see Operate device from a remote location on page 35.
Data log	Clickable	Shows access to the Data log page For more information, see Download device data log on page 36.

6.9.1 Control panel

6.9.1.1 Operate device from a remote location

1. On the right navigation pane, click the **Control panel** menu.
2. On the **Control panel** page, select the device.

3. To update the parameters that appear on the screen, click the **REFRESH** button.
4. To increase the engine speed, click the **SPEED INC** button.
5. To decrease the engine speed, click the **SPEED DEC** button.
6. To start the engine, click the **START** button.
7. To stop the engine, click the **STOP** button.
8. To see the **Alarms** page for the selected device, click the **Alarms** button.
9. To see the **Data log** page for the selected device, click the **Data log** button.

6.9.2 Data log

6.9.2.1 Download device data log

1. On the right navigation pane, click the **Data log** menu.
2. In the **Device name** list, select the device.
3. Select the start date and the end date for the data log report.
4. Click **Submit**.
The data log report for the selected device appears.
5. Click **Export** to download the data log report in CSV format.

7 Maintenance

7.1 Precautions

Before starting work, make sure that the safety instructions in the chapter [Introduction and Safety](#) on page 3 have been read and understood.



DANGER: Electrical Hazard

Troubleshooting a live control panel exposes personnel to hazardous voltages. Electrical troubleshooting must be done by a qualified electrician.



DANGER: Crush Hazard

Moving parts can entangle or crush. Always disconnect and lock out power before servicing to prevent unexpected startup. Failure to do so could result in death or serious injury.

7.1.1 Battery

Check that the cable has been disconnected from the negative battery terminal, as part of the power lock-out process.

7.2 Check the unit for general condition

Make sure that the unit is free from dust. Clean it by using a soft cloth.
Check the terminals for corrosion.

7.3 Replace a damaged unit

1. Disconnect the cable from the unit.
2. Remove the current unit and replace it with a new unit.
3. Follow the instructions in [Install the FST module](#) on page 10 and [Connect the wiring harness to the control panel](#) on page 14.
4. Send the old unit back to the manufacturer.

8 Troubleshooting

8.1 Precautions

Before starting work, make sure that the safety instructions in the chapter [Introduction and Safety](#) on page 3 have been read and understood.



DANGER: Electrical Hazard

Troubleshooting a live control panel exposes personnel to hazardous voltages. Electrical troubleshooting must be done by a qualified electrician.



DANGER: Crush Hazard

Moving parts can entangle or crush. Always disconnect and lock out power before servicing to prevent unexpected startup. Failure to do so could result in death or serious injury.

8.1.1 Battery

Check that the cable has been disconnected from the negative battery terminal, as part of the power lock-out process.

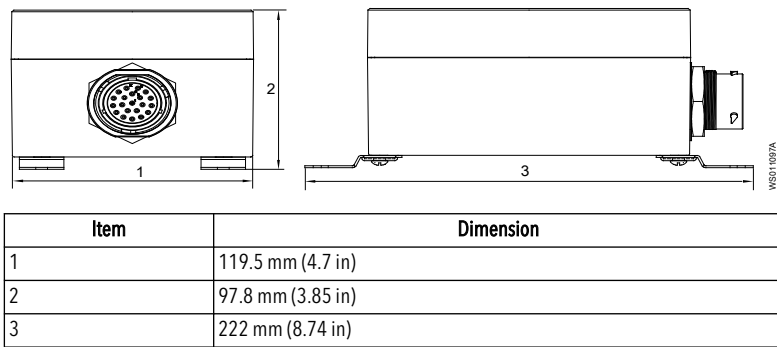
8.2 LED status

Status			Remedy
LED5 PWR	LED1 MODEM PWR	LED2 MODBUS COMM	
On	Blinks	Blinks	The unit is ok
On	On	On	Call customer service: 833-677-8776
Off	Off	Off	1. Check the 5 A fast-acting fuse and if necessary, replace it. 2. Check the voltage between Batt + and Batt -. 3. If the problem persists, then return the unit.
On	Off	Off	1. Disconnect the wiring harness from the FST module. 2. Wait for 10 seconds. 3. Connect wiring harness to the FST module. 4. Wait for 60 seconds to establish communication. 5. If the problem persists, then return the unit.

Status			Remedy
LED5 PWR	LED1 MODEM PWR	LED2 MODBUS COMM	
On	Blinks	Off	Check that the PrimeGuard 2 or PV102P control panel is programmed correctly. For more information, see the PrimeGuard 2 or PV102P configuration.

9 Technical Reference

9.1 Dimensions



9.2 Weight

- 0.82 kg (1.8 lb)

9.3 Environmental requirements

Feature	Value
Operating temperature	-40°C to +85°C (-40°F to +185°F)
Storage temperature	-50°C to +85°C (-58°F to +185°F)
Operating humidity	95% relative humidity, non-condensing

9.4 Standards

- NEMA 4X enclosure

9.5 Approvals

- CE

9.6 Electrical data

Feature	Description
Supply voltage	9 VDC to 30 VDC
Power consumption	12 VDC
Sleep mode	25 µA
GSM transmission	200 mA nominal
Satellite transmission	1000 mA nominal

9.7 Communications

GSM and GPRS

Band	Quad
GSM frequency	850 MHz, 900 MHz, 1800 MHz, and 1900 MHz
Server	SMTP, POP3, SMS, TCP, UDP, and FTP

Satellite

Transmission frequency	1616 MHz to 1626.5 MHz
Transmission power	2 W
Packet size	Tx 340 bytes, Rx 270 bytes

9.8 Connector terminals

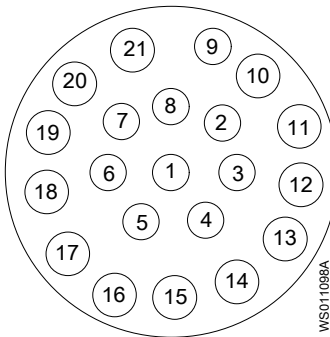
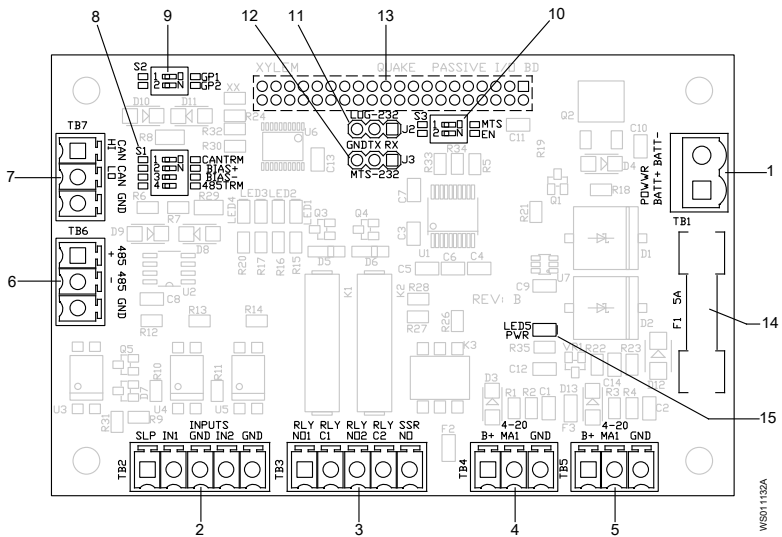


Figure 4: Terminals of the FST circular connector

Function	Terminal	Description
Input power	1	9 VDC to 30 VDC
	2	Ground (earth)
Digital input	6	Sleep mode
	3	Digital input 1
	NC	Ground (earth)
	10	Digital input 2
	NC	Ground (earth)
5 A relay, no contacts	11	Relay 1 - NO
	12	Relay 1 - COM
	13	Relay 2 - NO
	14	Relay 2 - COM
	15	Solid state relay (SSR), 130 mA

Function	Terminal	Description
4-20 mA 1	16	VBAT fused, 50 mA
	17	4-20 mA input 1
	18	Ground (earth)
4-20 mA 2	19	VBAT fused, 50 mA
	20	4-20mA input 2
	21	Ground (earth)
RS-485	8	RS485 +
	7	RS485 -
	9	Ground (earth)
CAN bus	5	CANH
	4	CANL
	NC	Ground (earth)

9.9 I/O board pin description



Item	Name	PCB terminal	Circular connector terminal	Description
1	Input power	TB1-1	1	+9 V to +30 V
		TB1-2	2	Ground (earth)

Item	Name	PCB terminal	Circular connector terminal	Description
2	Digital input	TB2-1	6	Sleep mode
		TB2-2	3	DIN1
		TB2-3	Not connected	Ground (earth)
		TB2-4	10	DIN2
		TB2-5	Not connected	Ground (earth)
3	5 A relay, no contacts	TB3-1	11	Relay 1 - NO
		TB3-2	12	Relay 1 - COM
		TB3-3	13	Relay 2 - NO
		TB3-4	14	Relay 2 - COM
		TB3-5	15	SSR - 130 mA
4	4-20 mA 1	TB4-1	16	VBAT fused, 50 mA
		TB4-2	17	4-20 mA - IN 1
		TB4-3	18	Ground (earth)
5	4-20 mA 2	TB5-1	19	VBAT fused, 50 mA
		TB5-2	20	4-20 mA - IN 2
		TB5-3	21	Ground (earth)
6	RS-485	TB6-1	8	RS485 +
		TB6-2	7	RS485 -
		TB6-3	9	Ground (earth)
7	CAN bus	TB7-1	5	CAN H
		TB7-2	4	CAN L
		TB7-3	Not connected	Ground (earth)
8	Switch 1	S1-1	–	CAN bus terminal, 120 ohm
		S1-2	–	RS-485 BIAS+
		S1-3	–	RS-485 BIAS-
		S1-4	–	RS-485 terminal, 120 ohms
9	Switch 2	S2-1	–	GP1, state change
		S2-2	–	GP2, state change
10	Switch 3	S3-1	–	Tx 232
		S3-2	–	Rx 232
11	J2, external logging port	J2-1	–	RxD 232
		J2-2	–	TxD 232
		J2-3	–	Ground (earth)
12	J3, external programming port	J3-1	–	RxD 232
		J3-2	–	TxD 232
		J3-3	–	Ground (earth)
13	Quake modem interface	–	–	–

Item	Name	PCB terminal	Circular connector terminal	Description
14	Fast-blow fuse	–	–	Fuse 1, 5 A
15	Power-on LED	–	–	LED5 power

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

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